

Claims

1. Method for treatment of spent liquor at a pulp mill, especially for treatment of black liquor, in which method spent liquor (10) arriving from the evaporation
5 plant is burnt in a soda recovery boiler (3) in order to recover its contents of chemicals and energy, **characterised** in that a part of the spent liquor flow (10) arriving from the evaporation plant is taken not to a soda recovery boiler (3) but to a pyrolysis reactor (1), wherein it is pyrolysed at a temperature of 300-800°C in order to separate evaporable compounds (12) from the coke (11) remaining in a
10 solid state, whereupon the evaporable compounds (12) are recovered and the coke (11) is taken to the soda recovery boiler (3) for burning.

2. Method for treatment of spent liquor at a pulp mill, especially for treatment of black liquor, in which method spent liquor (10) arriving from the evaporation
15 plant is burnt in a soda recovery boiler (3) in order to recover its contents of chemicals and energy, **characterised** in that a part of the spent liquor flow (10) arriving from the evaporation plant is taken not to a soda recovery boiler (3) but to a pyrolysis reactor (1), wherein it is pyrolysed at a temperature of 300-800°C in order to separate evaporable compounds (12) from the coke (11) remaining in a
20 solid state, whereupon the evaporable compounds (12) are recovered and the coke (11) is taken to a gasification reactor (3) for gasification, which gasification is implemented under such conditions that the sulphur compounds contained in the coke (11) and deriving from the cooking chemicals are reduced to sodium sulphide.

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3. Method for treatment of spent liquor at a pulp mill, especially for treatment of black liquor, in order to recover its contents of chemicals and energy, **character-**
ised in that the spent liquor flow (10) arriving from the evaporation plant is taken to a pyrolysis reactor (1), wherein it is pyrolysed at a temperature of 300-800°C in
30 order to separate evaporable compounds (12) from the coke (11) remaining in a solid state, whereupon the evaporable compounds (12) are recovered and the coke

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(11) is taken to a gasification reactor (3) for gasification, which gasification is implemented under such conditions that the sulphur compounds contained in the coke (11) and deriving from the cooking chemicals are reduced to sodium sulphide.

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4. Method for treatment of spent liquor at a pulp mill in order to recover its contents of chemicals and energy, **characterised** in that the spent liquor flow (10) arriving from the evaporation plant is taken to a pyrolysis reactor (1), wherein it is pyrolysed at a temperature of 300-800°C in order to separate evaporable compounds (12) from the coke (11) remaining in a solid state, whereupon the evaporable compounds are recovered and the coke is taken to a fluidised-bed boiler or some other combustion equipment (4) for burning in order to recover the energy content of the coke.

15 5. Method according to any one of claims 1-3, **characterised** in that the pyrolysis reactor (1) is for a batch process, whereby increasing of the temperature may begin from the temperature of the spent liquor arriving in the reactor, while the final temperature is chosen according to the desired final products.

20 6. Method according to any one of claims 1-4, **characterised** in that the pyrolysis reactor (1) is for a continuous process.

7. Method according to any one of claims 1-6, **characterised** in that the pyrolysis is carried out in such process conditions (temperature, pressure, residence time, heating speed, etc.), wherein the evaporable compounds (12) mainly consist of non-condensing gases.

8. Method according to any one of claims 1-6, **characterised** in that the pyrolysis is carried out in such process conditions (temperature, pressure, residence time, heating speed, etc.), wherein the evaporable compounds (12) mainly consist of pyrolysis oil.

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9. Method according to any one of claims 1-8, **characterised** in that the evaporable compounds (12) separated from the spent liquor in the pyrolysis reactor (1) are used at the mill as fuel in part or entirely.

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10. Method according to any one of claims 4-8, **characterised** in that the evaporable compounds (12) separated from the spent liquor in the pyrolysis reactor (1) are used at the mill as process chemicals in part or entirely.

10 11. Method according to any one of claims 1-8, **characterised** in that the evaporable compounds (12) separated from the spent liquor in the pyrolysis reactor (1) are processed further.

15 12. Method according to any one of claims 2-11, **characterised** in that the product gases (14) resulting from the gasification are used at the mill as fuel in part or entirely.

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